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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/287,602	04/07/1999	DONG-SOO KIM	5480-00200	6496

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EXAMINER

TRAN, HIEN THI

ART UNIT	PAPER NUMBER
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1764

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DATE MAILED: 05/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/287,602

Applicant(s)

KIM, DONG-SOO

Examiner

Hien Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “electrical power conductor” (claim 12), the “controller” (claim 13), the “drain valve” (claim 16) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. ✓

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities:

On page 8, line 8 “30” should be changed to --10-- (note lines 5 and 6). ✓

On page 9, line 21 it is unclear as to what “slm” stands for? ✓

Appropriate correction is required.

3. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 6 it is unclear as to what is meant and where it is disclosed in the specification and drawings that the conditioned gas is delivered “**above**” the guide plate 61 since it appears that the nozzles 62 for delivering the conditioned gas are located on the sides of the guide plate 61 (Fig. 2). See claim 21 likewise.

In claim 2, “adapted to” is vague and indefinite as it has been held that the recitation that an element is “adapted to” perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. In re Hutchison, 69 USPQ 138. See the remaining claims likewise.

In claim 4, line 5 “the angled bottom” lacks positive antecedent basis.

In claim 6, “high” and “low” are relative terms and therefore are vague and indefinite (see the remaining claims likewise). Furthermore the language of the claim is directed to method limitation which renders the claim vague and indefinite since it is unclear as to what structural limitation applicant is attempting to recite. Note that the gases are not parts of the apparatus.

In claim 13, it is unclear as to where it is disclosed in the specification.

In claim 16, line 5 it is unclear as to how the drain valve is related to other elements of the system.

In claim 17, “the drain” lacks positive antecedent basis. See claim 18 likewise.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 1-3, 5-8, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartung et al (5,900,217) alone or in view of Kim (Korean Patent Publication 97-9311 published June 10, 1997, English translation supplied).

With regard to claim 1, Hartung et al discloses a gas scrubber comprising:

a combustion chamber 6,
a wetting chamber (7),
a guide plate (16) arranged between the combustion chamber and the wetting chamber for directing a gas from the combustion chamber into the wetting chamber (Fig. 1); and
an injection nozzle (19) having an opening adapted to deliver a conditioned gas above the guide plate for minimizing the production and/or accumulation of a powder at an interface between the combustion chamber and the wetting chamber.

Hartung et al fails to disclose whether the wetting chamber may be placed below the combustion chamber as claimed.

However, Kim shows the conventionality of providing a gas scrubber having a wetting chamber below a combustion chamber.

At the time of the invention was made, it would have been obvious to one skilled in the art to place the wetting chamber below the combustion chamber since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to prevent the solution containing the absorbed material from being heated by the combustion chamber below it as evidenced by Kim and since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

With regard to claim 2, Hartung et al discloses a combustion chamber adapted to burn flammable elements of the gas (Abstract).

With regard to claim 3, Hartung et al discloses a wetting chamber adapted to receive water (Figure 1).

With regard to claim 5, Hartung et al discloses a water drenched absorber (7) across which the gas is directed. Although only one such absorber is discloses in Figure 1, it would have been obvious to multiply these absorbers since mere duplication of parts has no patentable significance unless new and unexpected results are produced. In re Harza, 124 U.S.P.Q. 378 (C.C.P.A. 1960). In any event, Kim discloses the conventionality of providing a wetting chamber having a plurality of absorbers as claimed. At the time of the invention was made, it would have been obvious to one skilled in the art to substitute the wetting chamber of Kim for

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the wetting chamber of Hartung et al for the known and expected results of obtaining the same results in the absence of unexpected results.

Hartung et al discloses an exhaust pipe (20) having an opening extending into the wetting chamber for receiving the directed gas after the gas is passed across at least a portion of the water drenched plurality of absorbers. Kim discloses an exhaust pipe (65) having an opening extending into the wetting chamber for receiving the directed gas after the gas is passed across at least a portion of the water drenched plurality of absorbers.

With regard to claim 6, Hartung et al discloses a combustion chamber (Figure 1 (6)), a water absorber (7), and a guide plate (16). Kim discloses a combustion chamber 30, absorbers 56-62, and a guide plate. The temperatures and gas contact are just operating conditions, not parts of the apparatus and therefore do not patentably distinguish the apparatus from the prior art.

With regard to claim 7, Hartung et al discloses a gas scrubber comprising:

a combustion chamber (6) for eliminating explosive and flammable elements contained in a gas delivered into the combustion chamber from a gas intake;

a wetting chamber (7) to receive the gas from the combustion chamber and dissolve a water soluble element of the gas; and

a means (19) for minimizing a powder produced due to a temperature difference between the combustion chamber and the wetting chamber at an interface between the combustion chamber and the wetting chamber.

Hartung et al fails to disclose whether the wetting chamber may be placed below the combustion chamber as claimed.

However, at the time of the invention was made, it would have been obvious to one skilled in the art to place the wetting chamber below the combustion chamber since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to prevent the solution containing the absorbed material from being heated by the combustion chamber below it as evidenced by Kim and since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

With regard to claim 8, Hartung et al discloses a gas scrubber wherein the combustion chamber comprises a case (2) connected to receive the gas intake (Figure 1) and an air intake (Figure 1) and a heating means (Figure 1, burner (12)) placed inside the case for applying heat to the gas flowing into the case from the gas intake. Kim discloses a gas scrubber wherein the combustion chamber comprises a case connected to receive the gas intake 22 and an air intake 24 and a heating means 13 placed inside the case for applying heat to the gas flowing into the case from the gas intake.

With regard to claim 14, the use of cooling jackets to cool flowing fluids is well-known in the art.

9. Claims 4, 9-13, 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hartung et al (5,900,217) in view of Kim (Korean Patent Publication 97-9311 published June 10, 1997, English translation supplied).

With regard to claim 4, Kim discloses a wetting chamber having an angled bottom surface, a drain valve 50 and a water nozzle 52 having an opening directed to the angled bottom for flushing the particulates into a drain 54.

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At the time of the invention was made, it would have been obvious to one skilled in the art to combine the drain and nozzle configuration of Kim with the apparatus of Hartung et al so as to prevent sludge buildup in the bottom of the wet chamber (Kim, page 4, lines 1-3).

With regard to claim 9, Hartung et al discloses a heating means including a heat chamber (Figure 1). Hartung et al fails to disclose multiple heat exchange units and electrical heating elements.

However, it would have been obvious to one skilled in the art to add additional heat exchange units, since mere duplication of parts has no patentable significance unless new and unexpected results are produced. In re Harza, 124 U.S.P.Q. 378 (C.C.P.A. 1960).

Kim discloses electrical heating elements (page 3 line 22; page 5 line 18).

At the time of the invention was made, it would have been obvious to one skilled in the art to use multiple electrical heating units, as well as placing the heating element inside a ceramic casing for a greater temperature control. This use of ceramics is well-known in the art.

Hartung et al discloses a pair of cleaning nozzles (19) installed on both upper sides of the heater chamber.

With regard to claim 10, it would have been obvious to modify the modified apparatus of Hartung by placing an insulator with an electric heater to prevent an electrical short circuit.

With regard to claim 11, Kim discloses Inconel for use as a heater housing (page 3 line 21).

At the time of the invention was made, it would have been obvious to one skilled in the art to use Inconel for a heater housing in the modified apparatus of Hartung et al to take the

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advantage of Inconel's heat resistance in order to withstand high temperature (Kim, page 5, lines 14-16).

With regard to claim 12, it would have been obvious to one skilled in the art to protect electrical connections located in a corrosive atmosphere by replacing the atmosphere with one that is noncorrosive.

With regard to claim 13, the manner of connecting and operating the heating units would have been obvious to one skilled in the art. No unexpected effect has been shown to result from this obvious attempt to maintain a fixed amount of heating in the apparatus, regardless of the number of heaters employed.

With regard to claim 15, Hartung et al fails to disclose a plurality of absorber installed in a region interior to a plurality of partitions as claimed.

Kim discloses a wetting chamber having a plurality of absorbers 56-62 installed in a region interior to a plurality of partitions 42-45, a water nozzle 52 having an opening directed to the angled bottom for flushing the particulates into a drain, a shower nozzle 47.

At the time of the invention was made, it would have been obvious to one skilled in the art to substitute the wetting chamber of Kim for the wetting chamber of Hartung et al for the known and expected results of obtaining the same results in the absence of unexpected results.

With regard to claims 16 and 17, Kim discloses a gas scrubber with a v-shaped bottom (3). Kim discloses a sensor that monitors the water level and initiates a water nozzle to inject water to push the sludge out.

At the time of the invention was made, it would have been obvious to one skilled in the art to combine the sensor and nozzle of Kim to automatically remove sludge (Kim, page 10, lines 2-6).

With regard to claim 18, it would be obvious to maintain a particular pressure by means of sensors and valves.

With regard to claim 19, Hartung et al discloses means (21) for viewing the interior of the apparatus. It would have been obvious to use a window for that purpose as well.

With regard to claim 20, it is well-known in the art to coat surfaces subject to chemical reaction with PTFE (Teflon) to prevent such reactions.

With regard to claim 21, Hartung et al discloses a guide plate (16) configured to guide the gas from the combustion chamber to the wetting chamber. Hartung et al also discloses an injection nozzle (19) to inject air or nitrogen above the guide plate for removing powder from the guide plate. The square funnel-shaped configuration is an obvious design choice and therefore within the knowledge and abilities of one skilled in the art.

Response to Arguments

10. Applicant's arguments filed 3/13/02 have been fully considered but they are not persuasive.

Applicant argues that none of the prior art teaches a gas scrubber comprising a wetting chamber placed below a combustion chamber and a means for minimizing the accumulation of a powder at the interface between the combustion chamber and the wetting chamber as recited in claim 1. Such contention is not persuasive as Hartung et al disclose all of the structural limitation of the instant claim except that the wetting chamber is placed above the combustion chamber.

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However, as set forth above, it would have been obvious to one skilled in the art at the time of the invention was made to place the wetting chamber below the combustion chamber since positioning the parts of the apparatus is no more than a design choice, and well within the knowledge of one skilled in the art so as to prevent the solution containing the absorbed material from being heated by the combustion chamber below it as evidenced by Kim.

Applicant argues that if the scrubber of Hartung et al was placed below the combustion chamber, the nozzle 18 would no longer cleanse the interface between the combustion chamber and the scrubber. While that may be true, the element that is analogous to Applicant's injection nozzle is the nozzle 19 in the modified apparatus of Hartung et al. There is no indication why the nozzle 19 in Hartung et al would not continue to function to cleanse the interface after placing the scrubber below the combustion chamber.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hien Tran whose telephone number is 308-4253. The examiner can normally be reached on Tuesday-Friday from 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 308-4311. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 308-0661.

HT
May 16, 2002



Hien Tran
Primary Examiner
Art Unit 1764